

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A computer-implemented method of reducing a memory footprint of a database table having a plurality of rows and one or more columns, wherein each of the one or more columns has a cardinality, and wherein the cardinality is a total number of different values in the rows of each column, the method comprising:

comparing the cardinality of at least one of the one or more columns with a total number of possible values of the cells in the rows of the at least one column based on a width of the at least one column; and

reducing the width of the at least one column [[if]] when the cardinality is less than a threshold based on the total number of possible values in the rows of the at least one column, the threshold is a least integer greater than or equal to the logarithm to the base two of the cardinality of the column.

2. (Canceled)

3. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 1, wherein a value of an entry in a row and a column comprises a data entry in a cell, wherein the column in the table has a maximum value length of k bits.

4. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 3, wherein a dictionary for the column has an entry for each different value in the column, wherein the dictionary for the column comprises a width of k bits.

5. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 4, wherein the width of the column comprises a number of bits used to specify column entries, wherein the column comprises a width of w bits, wherein w is an integer, wherein a value of w determines a number of different values in the column, wherein p is the number of different possible entries in the column, and wherein $p=2^w$.

6. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 5, wherein the cardinality of the column comprises a number of different values in the column, wherein the table comprises n rows, wherein the column comprises m different values and has cardinality m, and wherein the value of w is such that $m \leq p$, and if the column has repeated entry values then $m < n$.

7. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 6, wherein $\log_2 p = w$ and $\log_2 m < w$.

8. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 6, further comprising:

rewriting the column with one or more dictionary references; and
resetting the column width to w.

9. (Currently Amended) A computer-implemented method in accordance with claim ~~Claim~~ 8, further comprising:

decrementing w in increments of 1 as long as $m < p/2$; and
setting a value of w to wmin when decrementing ceases, wherein wmin is the least integer greater than or equal to $\log_2 m$ for a column with cardinality m and width w.

10. (Currently Amended) A computer-implemented method of reducing a memory footprint of a database table having a plurality of rows and one or more columns, wherein each of the one or more columns has a cardinality, and wherein the cardinality is a total number of different values in the rows of each column ~~method in accordance with Claim 1,~~ the method ~~further~~ comprising:

comparing the cardinality of at least one of the one or more columns with a total number of possible values of the cells in the rows of the at least one column based on a width of the at least one column;

reducing the width of the at least one column when the cardinality is less than a threshold based on the total number of possible values in the rows of the at least one column;

writing a dictionary for the at least one column, wherein the dictionary references the at least one column entries, and wherein the dictionary comprises one row for each of the different values in the at least one column; and

replacing column values by the dictionary references, wherein the dictionary comprises m rows, and wherein each row comprises a width of w bits.

11. (WITHDRAWN) A method to reduce an amount of memory associated with information in a database table having a plurality of rows and one or more columns, wherein the information relates to at least two columns, the method comprising:

determining respective values in the at least two columns in a memory;

determining whether the respective values are interdependent;

upon determining an interdependency, generating a combined column based on the at least two columns, wherein the combined column includes the respective values in the at least two columns; and

upon generating the combined column, deleting the at least two columns from memory.

12. (WITHDRAWN) A method in accordance with Claim 11 wherein a value identifier (ID) for a value in a dictionary comprises a row number of a corresponding entry in the dictionary, and wherein a document identifier (ID) of a column entry comprises a dictionary reference at a corresponding row number in the table.

13. (WITHDRAWN) A method in accordance with Claim 12, wherein the method comprises columns 1 and 2 with n rows and respective document identifiers (IDs) d_{1j} and d_{2j} for $1 \leq j \leq n$, and wherein the method further comprises dictionaries 1 and 2 that are configured to list different values in columns 1 and 2.

14. (WITHDRAWN) A method in accordance with Claim 13, wherein the method further comprises a dictionary 12 for combined column 12 that is adapted to list value IDs as pairs $[d_{1j}, d_{2j}]$, for $1 \leq j \leq n$, wherein document IDs d_{1j} and d_{2j} are from row j in columns 1 and 2 respectively.

15. (WITHDRAWN) A method in accordance with Claim 14, wherein a document list for the combined column 12 comprises entries d_{12j} , for $1 \leq j \leq n$, wherein each entry is adapted to provide the dictionary entry $[d_{1j}, d_{2j}]$ for row j in columns 1 and 2.

16. (WITHDRAWN) A method in accordance with Claim 15, the method further comprising deleting columns 1 and 2 from memory upon the existence of the

combined column 12, wherein the deletion reduces an amount of memory used to store the data from columns 1 and 2.

17. (WITHDRAWN) A method in accordance with Claim 16, wherein column 1 comprises n rows, cardinality m_1 , and a minimum width of w_1 bits, wherein the dictionary for column 1 comprises length m_1 and width w_1 , the column 1 dictionary comprising $m_1 * k_1$ bits in memory, and wherein the document list for column 1 comprises length n and width w_1 , the document list comprising $n * w_1$ bits in memory.

18. (WITHDRAWN) A method in accordance with Claim 17, wherein column 2 comprises n rows, cardinality m_2 , and a minimum width of w_2 bits, wherein the dictionary for column 2 comprises length m_2 and width w_2 , the column 2 dictionary comprising $m_2 * k_2$ bits in memory, and wherein the document list for column 2 comprises length n and width w_2 , the document list comprising $n * w_2$ bits in memory.

19. (WITHDRAWN) A method in accordance with Claim 18, wherein the dictionary for combined column 12 comprises a maximum length of $(m_1 * m_2)$ and further comprises a maximum of $(m_1 * m_2 * (w_1 + w_2))$ bits in memory.

20. (WITHDRAWN) A method in accordance with Claim 19, wherein the document list for combined column 12 comprises a length of n and further comprises a maximum of $(n * (w1 + w2))$ bits in memory.

21. (WITHDRAWN) A method in accordance with Claim 20, wherein the memory for combined column 12 comprises a measure of an extent of functional dependencies between columns 1 and 2.

22. (WITHDRAWN) A method in accordance with Claim 21, wherein the method is adapted to be generalized to combine n columns into a single column.

23. (Currently Amended) An article comprising a machine-readable medium storing instructions operable to cause a machine to perform operations comprising:

reducing a memory footprint of a database table having a plurality of rows and one or more columns, wherein each of the one or more columns has a cardinality, and wherein the cardinality is a total number of different values in the rows of each column, the reducing comprising:

comparing the cardinality of at least one of the one or more columns with a total number of possible values in the rows of the at least one column based on a width of the at least one column, the threshold is a least integer greater than or equal to the logarithm to the base two of the cardinality of the column; and

reducing the width of the at least one column when the cardinality is less than a threshold based on the total number of possible values in the rows of the at least one column.